

## **SUMMARY OF BOARD ITEM**

**ITEM # 02-2-1:**     **BOARD UPDATE ON HEALTH EFFECTS OF AIR POLLUTION: EFFECTS OF PARTICULATE MATTER ON THE CARDIOVASCULAR SYSTEM**

**STAFF RECOMMENDATION:**     Informational item.

**DISCUSSION:**     The ARB staff are providing the Board with monthly updates on the health effects of air pollution. This month staff would like to focus on the short-term health impacts of particulate matter. Later this year staff will be recommending changes to the ambient air quality standards for particulate matter.

**SUMMARY AND IMPACTS:**     Over the past decade a number of epidemiologic studies have reported a significant association between exposure to air-borne particulate matter (PM) and deaths and hospital admissions for cardiovascular causes. Staff will briefly discuss several recent studies on human subjects that have reported significant relationships between ambient PM exposure and several physiological responses that are known from previous clinical research to be risk factors for adverse cardiovascular outcomes, such as increased pulse rate, decreased heart rate variability, and elevated levels of protein indicators in the blood. Changes in these risk factors have been clinically linked to various heart pathologies, such as cardiac arrhythmia and myocardial infarction (heart attack) that lead to hospitalization and mortality for cardiovascular causes.

These findings come from epidemiologic studies. Further studies in both human subjects and animal models will provide more conclusive evidence that exposure to PM causes an increased risk for adverse cardiovascular effects. ARB is involved in funding several on-going research projects that will begin to provide the information that is needed to draw a causal link between PM exposure and adverse cardiovascular effects. Staff will discuss how future studies will provide better information on the adverse effects of particulate matter pollution.

